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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/621,250	07/16/2003	Dong Hwan Lee	CU-3300 WWP	1267

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EXAMINER	
MOON, SEOKYUN	
ART UNIT	PAPER NUMBER
2629	

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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/621,250	LEE ET AL.	
	Examiner	Art Unit	
	SEOKYUN MOON	2629	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *01 December 2008*.

2a)☐ This action is FINAL. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-3,5 and 13-22* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☒ Claim(s) *13-20* is/are allowed.

6)☒ Claim(s) *1-3,5, and 21-22* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *16 July 2003* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Remarks

1. In the previous Office Action mailed on May 29, 2008, all of the previously-presented claims were objected to because of minor informalities, but the subject matter of the claims was indicated as being allowable.

The Applicant has corrected the minor informalities and has amended independent claim 1 to broaden the claim scope.

In response to the Applicant's amendments to the claims, claims 1-3, 5, 21 and 22 are rejected in this correspondence.

2. Examiner respectfully submits that claim 21 is rejected twice based on different interpretations of the limitation of the claim.

Claim Rejections - 35 USC § 112

3. The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

4. Claim 5 recites the limitation "*the at least one state signal*" in line 2. There is insufficient antecedent basis for this limitation in the claim.

For further examination purpose, the claim will be construed as being dependent upon newly added claim 21 which discloses, "*at least one state signal*", as best understood by Examiner.

Appropriate correction is required.

Claim Rejections - 35 USC § 103

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

6. Claims 1-3, 5, and 21 are rejected under 35 U.S.C. 103(a) as being unpatentable over Moon (US 2003/0117356) in view of Nishitani (US 5,764,212).

As to claim 1, Moon teaches a liquid crystal display driving device [fig. 3 and par. (0043)] generating gate-on/off signals to drive liquid crystal comprising [par. (0007) lines 8-10, note that even though the teachings in the cited paragraph are mentioned under "*Description of the Related Art*" section, Moon's liquid crystal display driving device is also operated based on the teachings]:

a sequence recognition unit (means included in one of "*gate TCPs 46A-46D*", receiving one of "*gate start pulse*" and "*gate enable signal*") [fig. 3 and par. (0054) lines 1-9] for recognizing sequence of a pertinent gate driver IC from a plurality of gate driver ICs (Note that "*gate start pulse*" and "*gate enable signal*" correspond to a location of a gate driver IC within a plurality of gate driver ICs); and

a gate-off voltage generation unit (a combination of means for generating gate driving signals within one of "*gate driver ICs 48A-48D*" and a compensating resistor corresponding to the one of "*gate driver ICs 48A-48D*") [fig. 3 and par. (0055)] for receiving a first gate-off voltage ("*gate low voltage*", i.e. "*Vg1*")) [par. (0057)] and location data (one of "*gate start pulse*" and "*gate enable signal*") of the pertinent gate driver IC, and outputting a second gate-off

voltage which is generated by subtracting a voltage attenuation quantity corresponding to the location data of the gate driver IC from the first gate-off voltage [par. (0057) lines 6-10].

Moon does not expressly teach the sequence recognition unit recognizing sequence of a pertinent gate driver IC from a plurality of gate driver ICs by a pulse width of a vertical start signal inputted in synchronization with a vertical synchronous signal and generating a carry signal and location data of the pertinent gate driver IC.

However, Nishitani teaches a concept of including a sequence recognition unit (a combination of "*counter 92*" and "*decoder 93*") [fig. 25] in a gate driver ("*gate driver 89-1*") [figs. 24 and 25], which recognizes sequence of the gate driver among a plurality of gate drivers by a pulse width of a vertical start signal ("*enable input signal 91*") [fig. 25] and generating a carry signal ("*enable output signal 97*") and location data (the signal outputted from the "*decoder 93*") of the gate driver [col. 21 lines 24-37].

It would have been obvious to one of ordinary skill in the art at the time of the invention to implement Nishitani's sequence recognition means into Moon's gate driver ICs (i.e. implementing the structure of Nishitani's sequence recognition means shown on fig. 25 into Moon's gate driver ICs), which recognizes sequence of a gate driver IC among a plurality of gate driver ICs by a pulse width of a vertical start signal and generates a carry signal and location data, in order to allow Moon's liquid crystal display driving device to control and process the gate on/off voltages outputted from the plurality of gate driver ICs, precisely.

Moon as modified by Nishitani inherently teaches the vertical start signal being inputted in synchronization with a vertical synchronous signal because the driving device would not

output image data to column/data electrodes at correct timings if the signal activating the gate driver ICs, i.e. the vertical start signal, is not synchronized to the vertical synchronous signal.

As to claim 2, Moon as modified by Nishitani teaches the sequence recognition unit [Nishitani: fig. 25] comprising:

a m-bit counter (Nishitani: "*counter 92*") [Nishitani: fig. 25] for estimating the pulse width of the vertical start signal (Nishitani: "*enable input signal 91*") [Nishitani: col. 21 lines 24-37, note that, in the device of Moon as modified by Nishitani, the m-bit counter is activated based on whether the enable input signal is high or not] inputted in synchronization with the vertical synchronous signal (as discussed with respect to the rejection of claim 1), and generating the location data of the pertinent gate driver IC; and

a carry signal generation unit (Nishitani: the means included in the "*counter 92*" generating "*enable output signal 97*") [Nishitani: fig. 25] for generating the carry signal (Nishitani: "*enable output signal 97*") that a vertical start signal (Nishitani: "*enable output signal 97*") thereof has a pulse width changed on the basis of location of the pertinent gate driver IC [Nishitani: col. 21 lines 24-37, note that, in Nishitani's driving device, the pulse width becomes zero when the gate driver IC is not selected].

As to claim 3, Moon as modified by Nishitani teaches that the carry signal (Nishitani: "*enable input signal 97*") [Nishitani: fig. 25] is provided to the next gate driver IC so as to be used as a vertical start signal [Nishitani: col. 21 lines 24-37].

As to claim 21, Moon as modified by Nishitani teaches the gate-off voltage generation unit receives at least one state signal (Moon: any one of gate signal, gate start pulse, and gate enable signal) [Moon: par. (0054)] (Note that since any one of gate signal, gate start pulse, and

gate enable signal controls/changes a state of a component within the display, it would be reasonable to construe any one of the signals as a state signal).

As to claim 5, Moon as modified by Nishitani teaches that the at least one state signal is determined according to resolution, size of a liquid crystal panel, and characteristic of a signal line pattern (Note that all of gate signal, gate start pulse, and gate enable signal are determined based on the resolution, size of a liquid crystal panel, and characteristics of a signal line pattern because if the resolution or the size of a liquid crystal panel or the number of signal line is increased, then the timing of applying the gate signal and the gate start pulse and the gate enable signal must be changed in order to apply image data to pixels of the display at correct timings.).

7. Claims 21 and 22 are rejected under 35 U.S.C. 103(a) as being unpatentable over Moon and Nishitani as applied to claims 1-3 above, and further in view of Sakamoto (US 6,049,319).

As to claim 21, Moon as modified by Nishitani does not expressly teach the gate-off voltage generation unit receiving at least one state signal.

However, Sakamoto teaches a concept of having a gate-off voltage generation unit (a combination of "*20*", "*22*", and "*3*") [fig. 5] receiving a state signal (the signal inputted to "*20*") and adding a compensation value corresponding to the state signal to a gate-off voltage, thereby generating a second gate-off voltage [col. 5 lines 51-62].

It would have been obvious to one of ordinary skill in the art at the time of the invention to modify the gate-off voltage generation unit of Moon as modified by Nishitani to receive a state signal and to add a compensation value corresponding to the state signal to the gate-off voltage, thereby to generate a second gate-off voltage, as taught by Sakamoto, in order to reduce cross talk occurred in the display and thus to improve the quality of images to be displayed.

As to claim 22, Moon as modified by Nishitani and Sakamoto teaches that the gate-off voltage generation unit subtracts voltage attenuation quantity corresponding to location data of the gate driver IC from an inputted gate-off voltage [Moon: par. (0057) lines 6-10, as discussed with respect to the rejection of claim 1] and adds a compensation value corresponding to one of the at least one state signal to the subtracted gate-off voltage, thereby generating the second gate-off voltage [Sakamoto: col. 5 lines 51-62, as discussed with respect to the rejection of claim 21].

Allowable Subject Matter

8. Claims 13-20 are allowed.

Conclusion

9. Any inquiry concerning this communication or earlier communications from the examiner should be directed to SEOKYUN MOON whose telephone number is (571)272-5552. The examiner can normally be reached on Mon - Fri (8:30 a.m. - 5:00 p.m.).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Sumati Lefkowitz can be reached on (571) 272-3638. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

February 23, 2009
s.m.

/Sumati Lefkowitz/
Supervisory Patent Examiner, Art Unit 2629